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ROTORCRAFT INSTRUCTIONS FOR CONTINUED AIRWORTHINESS

CHELTON FLIGHT SYSTEMS, INC.

FLIGHTLOGIC SYNTHETIC VISION EFIS, FLIGHT AND NAVIGATION INSTRUMENTATION SYSTEM

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CHELTON FLIGHT SYSTEMS

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Revision	Notes	Date	Author
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1 INTRODUCTION

1.1 PURPOSE

The purpose of this "Instructions For Continued Airworthiness" document is to provide the line maintenance Technician with the information necessary to ensure the continued airworthiness of the Chelton Flight Systems, FlightLogic Synthetic Vision EFIS, flight and navigation instrumentation system as installed under Rotorcraft EFIS-SV STC SR02209AK. This plan is designed to comply with FAA regulatory requirements for Instructions for Continued Airworthiness.

This plan must be placed into the aircraft operator's Aircraft Maintenance Manual and incorporated into the operator's scheduled maintenance program.

1.2 EFFECTIVITY

This "Instructions For Continued Airworthiness" document is effective for all Bell 206 series helicopters, incorporated with the Chelton Flight Systems, FlightLogic Synthetic Vision EFIS, flight and navigation instrumentation system as noted in above STC.

1.3 REFERENCE DOCUMENTS

This document forms a part of overall aircraft continued airworthiness requirements and is to be used in conjunction with the following documents as applicable. For the latest revision of this or any of the following documents, see Chelton Flight Systems at www.cheltonflightsystems.com

DOCUMENT NUMBER	TITLE
150-045709	Rotorcraft Flight Manual Supplement
150-045264	System Installation Instructions
150-0452404	Chelton EFIS II Pilot's Guide and Reference

NOTE: It is the responsibility of the Maintenance Technician to verify with the Vendor that the Equipment Manual being used is the latest revision.

1.4 APPLICABLE FAR

FAR Part 21.50 "Instructions for continued airworthiness and manufacturer's maintenance manuals having airworthiness limitations sections."

1.5 GENERAL

Maintenance technicians should thoroughly familiarize themselves with Chelton Flight Systems, FlightLogic Synthetic Vision EFIS installation, wiring interface, and system operation, prior to attempting to maintain or troubleshoot this system.

1.5.1 WIRING INSTRUCTIONS

NOTE: It is expected that the skilled technicians performing the inspections, test, and troubleshooting of the Chelton Flight Systems, FlightLogic Synthetic Vision EFIS system,

will adhere to the safety practices and operational procedures given in the basic aircraft manufacturers Maintenance Manuals.

Wire Separation
Whenever it becomes necessary to repair or replace a wire or group of wires, maintain the same wire separation that was used to install the system. Any wire added to or removed from the aircraft should satisfy separation requirements and wiring standards. (Ref; AC43.13-1B)

Wire Routing
Whenever it becomes necessary to repair or replace a wire or group of wires, maintain the same wire routing that was used to install the system. Wires should be routed using proper bend radius, drip loops, and slack to allow for easy access for maintenance repairs and inspection. Route wires in such a manner that it does not violate any regulatory safety requirements. (Ref; AC43.13-1B)

Securing Wire Bundles
Whenever it becomes necessary to repair or replace a wire or group of wires, clamps of the proper size, type, and material should be used. Secure repaired or replaced wiring in the same manner that it was installed in the aircraft. (Ref; AC43.13-1B)

Wire Termination
Whenever it becomes necessary to terminate wires, care should be taken to ensure enough slack in wiring for proper servicing, repair, and fit. When stripping wires for termination, be sure not to nick or cut strands of wire. Check that proper crimping tools are used, and that they are set to the proper setting for a correct crimp. When using crimping terminals and/or splices, use correct size for the wire gauge. If soldering is necessary be sure a cold solder joint does not exist, and that shrink tube of the proper size is installed over the wire and connection point. (Ref; AC43.13-1B).

2 SYSTEM DESCRIPTION

The FlightLogic synthetic vision EFIS is a complete flight/navigation instrumentation system that intuitively provides information to a pilot via computer-generated screens shown on panel-mounted hardware.

The panel-mounted hardware consists of one Primary Flight Display (that only shows the PFD screen) and one or more multifunction displays (MFD). The MFD can be configured by the pilot as a reversionary PFD or ND at the touch of a button. The ND can be further configured as a moving map, electronic HSI, a dedicated traffic display, or a dedicated weather display.

PFD

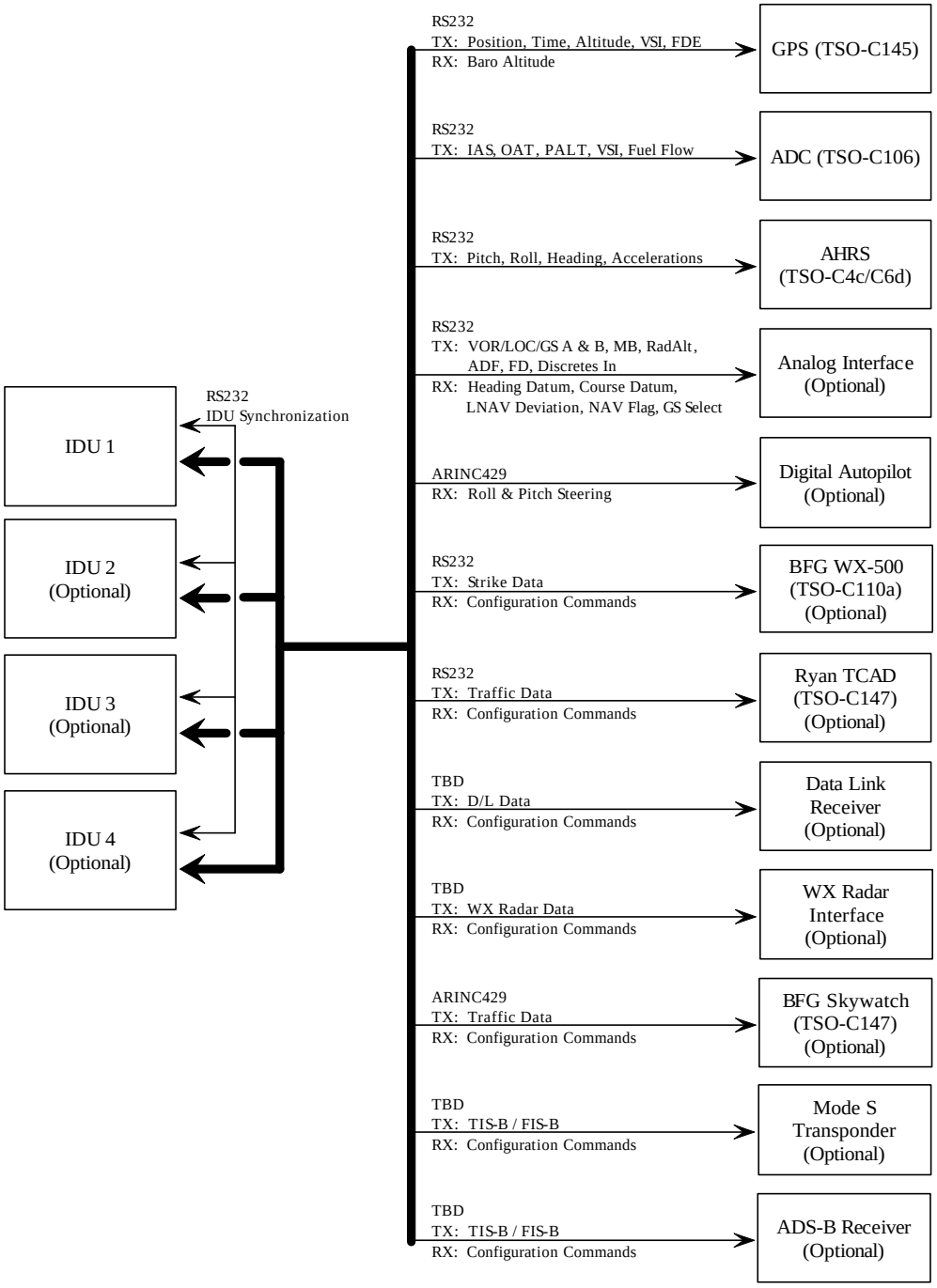
MFD

The displays are comprised of a high-brightness backlit LCD screen, eight buttons, two control knobs, and an optional slip indicator. The buttons and slip indicator are also backlit and their brightness can be adjusted independently of the screen.

Remote-mounted equipment consists of an AHRS (Attitude/Heading Reference System), an ADC (Air Data Computer), and a GPS WAAS receiver.

2.1 SYSTEM CONFIGURATION

Each display is driven by its own internal processor. A complete system consists of at least one MFD, one AHRS, one ADC, and one GPS receiver. All displays communicate with (but do not rely upon) each other and all sensors are connected to the displays in parallel, so each display is independent from all others and, except for the PFD, can show any page at any time. The data transfer between components, along with the additional equipment that can be interfaced with the EFIS are indicated in the following block diagram.



The systems may be configured with a backup battery on an essential bus to provide power in the event of an electrical system failure. In addition, various component failure modes are automatically handled by the software and annunciated to the pilot both visibly and audibly.

2.2 CAUTION/WARNING/ADVISORY SYSTEM

The Chelton FlightLogic EFIS includes an integrated auditory caution/warning/advisory (CWA) system that monitors a wide variety of parameters and provides auditory annunciations for conditions that demand pilot awareness. Auditory annunciations take the form of either a voice warning or a chime.

Annunciations are grouped into three categories: warning, caution, and advisory. Warnings are accompanied by a red flag and repeatedly annunciated until the condition is corrected or acknowledged by the pilot (by pushing the MUTE button on the yoke or panel). Cautions are accompanied by an amber flag and are annunciated once. Advisories are accompanied by a green flag or no flag, depending on condition, and are accompanied by a single voice annunciation or chime.

NOTE: Voice annunciations are programmed in duplicate ("stall, stall" or "altitude, altitude") and cannot be silenced while playing; pressing the MUTE button just keeps a warning from repeating.

CWA Flags are stacked with warnings displayed on top, followed by cautions and then advisories. Certain warnings and cautions are prioritized (i.e., a lower priority warning or caution is not shown while a higher priority warning or caution is active) by the system to minimize cockpit distractions.

2.3 DISPLAYS

Each integrated display unit (IDU) incorporates eight peripheral buttons (each labeled for a dedicated function) a brightness knob (left side), a menu control knob (right side), and an optional slip indicator. The peripheral buttons and slip indicator are backlit. The buttons are separated by machined "prongs" that isolate the buttons to prevent inadvertent actuation.

There are two kinds of functions: button functions and menu functions. Button functions are activated by pushing a button labeled accordingly. Menu functions are activated by pushing a button adjacent to the desired menu on the screen.

The brightness knob turns clockwise to increase screen brightness and counterclockwise to decrease screen brightness. Pushing the brightness knob while turning adjusts the button and slip indicator brightness in the same manner.

To activate a button function, push the corresponding button.

To activate a menu function, push the button that corresponds with the menu. To display menus, push the Menu button.

When a menu appears in the lower right corner of the screen, it is controlled with the right-hand knob. Turn the knob to scroll to the desired menu item, letter, or number, and then push to select.

If there are no menus shown on the PFD screen, turning the control knob sets the barometric pressure for the altimeter. Pushing it has no function. Likewise, turning the control knob on the MFD when there are no menus shown sets the scale of the map. Pushing the knob on the MFD instantly brings up a reversionary PFD screen; pushing it again returns to the navigation display.

Once inside the menu structure, the top left button (adjacent to the BACK menu) always takes you back one step in the menu structure. The top right button (adjacent to the EXIT menu) always takes you completely out of the menus.

2.4 MECHANICAL CONSIDERATIONS

The displays slide into trays that connect to the aircraft's electrical system and protect the displays from EMI, RFI, HIRF, and over/under/reversed supply current. The display's internal power supply filters and converts input supply current to usable and stable voltages at appropriate power levels for internal use. The internal power supply also stores sufficient energy to supply uninterrupted power during momentary power interruptions.

The displays are identical in form, fit, and function. Function is determined by a software configuration card ("SCC card") mounted in the tray. Therefore, the displays are interchangeable. The optional slip indicator may be interchanged with a blank plug without disassembling the display by removing two screws on the bottom of the device.

Installation and removal of the display is accomplished using a 3/32" hex driver inserted into a hole immediately to the left of the data card slot. The hex driver turns a jackscrew that ensures positive engagement or disengagement of the display with the connectors in the tray. This requires about 14 revolutions of the jackscrew.

A cooling fan is mounted in a cavity on the back of the back of the display and can be accessed by sliding the display out of the tray and removing the fan cover plate. The fan is serviceable without further disassembly.

The AMLCD (active matrix liquid crystal display) screen is illuminated by a combination of cold-cathode fluorescent tubes arranged in two pairs with each pair driven by its own independent power supply. Typical bulb life is approximately 25,000 hours. The fluorescent bulbs are augmented by LEDs for cold operation, redundancy, and nighttime dimming capability.

2.5 NAVIGATION AND OBSTRUCTION DATABASE

The EFIS uses Jeppesen NavData for the navigation database, and government sources for the obstruction database.

A SmartMedia data card is used to update these databases. A slot in the bezel immediately below the slip indicator provides access to the display's data card reader. When the system is powered up with the data card inserted, it enters the ground maintenance mode, which provides for system updates. When inserted, a portion of the data card remains exposed and the card can be removed by pulling on the exposed portion. There is no eject button. A red LED, mounted immediately to the left of the data card slot, provides an indication of when the data card is being accessed.

IMPORTANT: Do not remove the data card when the red LED is illuminated or damage to the data card may result, although it will not cause any damage to the EFIS display (it will simply cause the system to restart and enter flight mode). It is good practice to only insert or remove the data card with the system powered OFF.

NOTE: The system cannot enter flight mode while the data card is in the slot. Inserting the data card in flight has no effect.

2.6 TERRAIN DATABASE

The terrain database is stored on an internal solid-state flash drive. Updating the terrain database requires replacing this drive, which can be done without opening the display enclosure. The IDU must be removed from its tray to gain access to the drive slot

2.7 ATTITUDE/HEADING REFERENCE SYSTEM

The AHRS is a high performance, solid-state attitude and heading reference system (AHRS). This high reliability, strap-down inertial system provides attitude and heading measurement using MEMS (micro-electromechanical sensor) gyros and accelerometers. The information provided by the AHRS is used to drive the Attitude Indicator (Artificial Horizon) and Directional Gyro (slaved) indicator. Thus the AHRS provides the same functions traditionally provided by these two spinning gyros and slaved magnetometer.

An internally computed level platform in the AHRS eliminates all precession errors and gyro tumble conditions. All calibration information is stored internally and used by the internal computer to compensate sensor operation.

The AHRS achieves its excellent performance by employing proprietary Kalman filter algorithms to determine stabilized roll, pitch, and heading angles in static and dynamic conditions. The Kalman filter implementation results in a continuous on-line gyro bias calibration, and an adaptive attitude and heading measurement that is stabilized by the long-term gravity and magnetic north references. No external aiding is required; the AHRS functions without requiring air-data or GPS input which greatly increases safety and reliability.

The AHRS transmits attitude and heading information to the EFIS on a digital data bus.

The AHRS is remote mounted and designed to meet FAA requirements. A sophisticated suspension system ensures full performance in aircraft vibration environments. A sealed enclosure ensures full performance over full altitude and temperature range without risk of moisture contamination. A comprehensive Built-In Test (BIT) monitors all sensors and internal electronics continuously during operation and sends a system status update to the EFIS 20 times per second.

The maximum roll and pitch rate for the AHRS is 200° per second. On startup, the AHRS performs an extensive self-test and sensor initialization for 90 seconds. The aircraft must remain stationary during the self-test and alignment initialization (wind gusts and movement within the aircraft will not affect initialization). The AHRS notifies the EFIS through the data bus when the initialization and self-test routine has been completed successfully. The EFIS will not display attitude until the AHRS has successfully initialized. The AHRS can also be initialized in flight. To accomplish this, steady, non-accelerating flight should be maintained throughout the initialization period.

2.8 AIR DATA COMPUTER (ADC)

The Airdata Computer is connected to the aircraft pitot, static ports, OAT probe, and fuel system to measure indicated airspeed, pressure altitude, outside air temperature, and fuel flow. From these raw data, TAS, true air temperature and outside air temperature are calculated for display on the system. These data are also used to calculate the winds aloft, fuel endurance and range, and density altitude.

Note: Leaks in the pitot-static system can cause erroneous airspeed, altitude, and winds aloft information.

2.9 GPS RECEIVER

The Global Positioning System (GPS) is a space-based radio-navigation system. It consists of 24 satellites, which orbit the Earth at an altitude of approximately 11,000 miles, and ground stations. GPS provides users with accurate information on position, velocity, and time anywhere in the world and in all weather conditions

WAAS (Wide Area Augmentation System) is a GPS-based navigation and landing system that will provide precision guidance to aircraft at thousands of airports and airstrips where there is currently no precision landing capability. Systems such as WAAS are known as satellite-based augmentation systems (SBAS). WAAS is designed to improve the accuracy and ensure the integrity of information coming from GPS satellites.

The WAAS is based on a network of approximately 25 ground reference stations. These precisely surveyed ground stations receive signals from GPS satellites and any errors in the signals are identified by comparing GPS-indicated position with the known surveyed position. Each station in the network then relays the error data to one of two wide area master stations where correctional information for specific geographical areas is computed. The WAAS improves basic GPS accuracy to approximately 7 meters vertically and horizontally and provide important integrity information about the entire GPS constellation.

The Chelton FlightLogic EFIS obtains position information from a TSO-C145 GPS WAAS receiver. The GPS sends position and integrity data to the displays, which present it as useful position, navigation, and wind information on the PFD and moving map displays. GPS position is also used for terrain awareness alerting (TAWS) functions. GPS status is monitored continuously by the EFIS.

2.10 COMPONENT FAILURE MODES

The EFIS continuously monitors attached sensors for receipt of a valid data strings and for status information. Should a valid data string not be received within certain time periods, or if the sensor status information indicates a failure, then the associated sensor is considered to be in a failed condition.

Failure of a weather receiver, datalink receiver, TCAS/TCAD receiver, or autopilot interface results in the EFIS issuing an amber caution flag and voice annunciation. None of these receivers or devices significantly impacts the navigational or display capabilities of the EFIS.

Failure of the GPS, the AHRS or the ADC, singly or in combination, adversely impacts the EFIS capabilities. These failures are annunciated with amber caution flags on the MFD and corresponding voice warnings. In addition, the software provides degraded displays to show as much useful and accurate information as possible in the failure condition.

3 CONTROL AND OPERATION INFORMATION

A complete description of the EFIS system functions, control, and operation is contained in the Chelton, FlightLogic, Synthetic Vision EFIS, Pilot's Guide and Reference Doc. No. 150-045240.

Installation information is contained in the FlightLogic Synthetic Vision EFIS Installation Instructions, Doc. No. 150-045264.

4 SERVICING INFORMATION

4.1 EFIS IDU

The LCD screen is easily damaged. Avoid rubbing with a hard or sharp object. Wipe water off immediately. Long contact with water may cause discoloration or spots. Clean a soiled screen with an absorbent soft cotton cloth.

5 MAINTENANCE INSTRUCTIONS

5.1 NAVIGATION AND OBSTRUCTION DATA BASES:

The customer will receive a SmartMedia card with the latest Navigation and Obstruction database updates approximately every three weeks via mail. An alternate method of obtaining databases is to access the Chelton Flight Systems internet site, www.cheltonflightsystems.com, and download an authorized version of the data base(s) to a SmartMedia card. The customer updates the system by installing the SmartMedia card in each IDU and performing the update procedure outlined in the Ground Maintenance Functions section, in Chapter 4 of the Chelton Flight Systems, FlightLogic Synthetic Vision EFIS System Installation Instructions, document number 150-045264.

5.2 STRUCTURAL INSPECTIONS:

No inspections required

5.3 SYSTEM OPERATIONAL CHECKOUT AFTER MAINTENANCE

It is the Owner's/Operator's responsibility to ensure that after maintenance is performed on the system, a system checkout is performed to verify that the maintenance did not adversely affect the operation or intended functionality. Alterations involving relocation of displays, controls, sensors or wiring requires system operational checks in accordance with Chelton Flight Systems, Inc., EFIS System Installation Instructions, Doc. No. 150-045264, Chapter 5 (Ground Functional Test) and Chapter 6 (Flight Functional Test).

5.3.1 EFIS IDU

1. Apply aircraft power
2. Apply power to the EFIS system
3. As the system powers up, a warble tone should be heard
4. Verify all IDUs display the EFIS "Initializing" screen for approximately 10 seconds
5. Verify all IDUs display the EFIS "Testing" screen for approximately 60 seconds
6. Verify all IDUs display the EFIS status screen
7. Verify the following information on the screen:
    a. EFIS software version
    b. "SOFTWARE OK (CPU NUMBER = #)" displayed in the center of the screen

   c. Navigation database coverage
   d. Navigation database valid and expire date
   e. Obstruction database expire date
   f. Terrain coverage and valid date
8. Press any key on each IDU to continue
9. Verify the PFD displays the PFD page
10. Verify the MFD(s) displays the Navigation page.

5.3.2 GPS SENSOR

1. Locate the aircraft in an area that will not shadow the GPS antenna from the sky
2. Perform step 5.3.1 *EFIS IDU*
3. Verify the caution flag "NO GPS" is not displayed on any IDU and the aural warning "GPS failure, GPS failure" is not heard on the aircraft audio system.

NOTE: A "GPS LOI" caution flag may be present depending upon GPS satellite coverage.

5.3.3 AIR DATA COMPUTER (ADC)

1. Perform step 5.3.1 *EFIS IDU*
2. Verify the caution flag "NO AIR DATA" is not displayed on any IDU and the aural warning "Air data failure, Air data failure" is not heard on the aircraft audio system.

NOTE: A green "ADC INIT" flag may be present after the EFIS starts operating. This flag will be removed once the ADC has completed its warm-up period. ADC information (airspeed and altitude) may not meet TSO accuracies until this flag is removed.

5.3.4 AHRS500GA

1. Perform step 5.3.1 *EFIS IDU*
2. Verify the caution flag "NO ATTITUDE" is not displayed on any IDU and the aural warning "Attitude failure, Attitude failure" is not heard on the aircraft audio system.

6 TROUBLESHOOTING INFORMATION

There are no field serviceable components within the Chelton Flight Systems, FlightLogic EFIS system. For system function checkout procedures, please refer to the Ground Maintenance Functions section in chapter four of the System Installation Instructions, document number 150-045264.

Problem	Cause	Solution
IDU does not power on (blank screen)	1. Improper wiring	1. Verify power is on IDU P2, pins 5, 6, 7, and 8.
	2. Loss of ground	2. Verify ground on IDU P2, pins 24, 25, 26, and 31.
	3. Circuit breaker open	3. Verify circuit breaker is pushed in.

No EFIS audio	1. Improper wiring	1. Verify audio wiring from IDUs are connected to the un-muted audio input of the audio system. 2. Verify the audio output is not shorted to the shield.
No EFIS audio muting	1. Improper wiring 2. EFIS displays a caution flag	1. Verify wiring from IDUs are connected to the EFIS MUTE switch. 2. Verify aircraft ground is connected to the EFIS MUTE switch. 3. EFIS audio muting is only performed during a warning condition that is associated with a red flag on the IDU.
Cannot select items in Ground Maintenance menu	1. Improper wiring 2. IDU(s) turned off	1. Verify wiring from IDU to keyboard plug are connected. 2. Verify all IDUs in system are operating.
IDU always starts in Ground Maintenance menu	1. SmartMedia card is installed in IDU 2. IDU defective	1. Verify the SmartMedia card is not installed in the IDU before applying power. 2. Replace defective IDU.
EFIS system does not operate properly.	1. SCC cards not installed correctly. 2. EFIS limits not programmed.	1. Verify SCC cards are installed in the proper racks as follows: SCC #1 – PFD SCC#2 – MFD1 SCC #3 – MFD2 SCC#4 – MFD3 2. Program the limits by running IDU Limits program per Chapter 4 of System Installation Instructions, Doc 150-045264.
IDU displays “NO ATTITUDE” flag	1. Defective wiring to AHRS 2. AHRS not calibrated 3. Defective AHRS	1. Verify power is present on AHRS pin 3. 2. Verify AHRS circuit breaker is in. 3. Verify ground is on AHRS pin 4. 4. Verify comm. wires from AHRS to IDU are correct and not shorted to ground or each other. 5. Verify AHRS is calibrated by running GYRO-VIEW with calibration cable connected to the AHRS and a laptop computer. 6. Replace AHRS.
IDU displays “NO AIR DATA” flag	1. Defective wiring to ADC	1. Verify power is present on ADC pin 55. 2. Verify ADC circuit breaker is in.

		3. Verify ground is on ADC pin 54. 4. Verify comm. wires from ADC to IDU are correct and not shorted to ground or each other.
	2. Defective OAT probe	5. Verify OAT probe wires are connected to ADC. 6. Replace OAT probe.
	3. Defective ADC	7. Replace ADC
IDU displays “NO GPS” flag	1. Defective GPS system	1. Verify GPS status by viewing the Faults menu on the MFD (see section 5.3.2). The Faults menu will aid in troubleshooting the GPS system. a. GPS PWR failure: i. Verify power is present on GPS pin 6. ii. Verify ground is on GPS pin 19. iii. Verify GPS circuit breaker is in. iv. Verify comm. wires from GPS to IDU are correct and not shorted to ground or each other. v. Replace GPS receiver. b. GPS EQPMNT failure: i. Verify GPS antenna is connected to receiver. ii. Verify GPS antenna coax is not shorted or open. iii. Replace GPS receiver. iv. Replace GPS antenna. c. GPS SATLT failure: i. Verify GPS antenna has unobstructed view of sky. ii. Verify GPS receiver has a current almanac by letting the GPS operate for 30 minutes with an unobstructed view of sky. iii. Replace GPS receiver.

7 REMOVE AND REPLACEMENT INFORMATION

NOTE: Prior to removal of any of the following equipment, first disconnect power to the aircraft. Upon completion or reinstallation of any of the following equipment, please follow the System Operational Checkout procedures listed in section 5.3 of this document.

MANUFACTURER	P/N	DESCRIPTION
Chelton Avionics	401-045500-0101	IDU
Shadin	681201A-1	Temp Probe
Shadin	962830A-1-S-8	ADC Sensor
Freeflight	84100-01-0101	GPS
Freeflight	81194	GPS Antenna
Crossbow	8350-0062-01	AHRS

7.1 FLIGHTLOGIC SYNTHETIC VISION EFIS IDU

Removal of the IDU is performed by inserting a 3/32" hex driver in the lower left-hand hole on the bezel and rotating counter-clockwise until the IDU stops moving away from the instrument panel. Grasp the IDU along its sides and slide the unit completely out of the tray.

If replacing IDUs, remove slip indicator or non-slip blank by removing two 4-40 Phillips screws located on the bottom of the IDU. Install slip indicator or non-slip blank in new IDU and fasten with two 4-40 Phillips screws removed from old unit.

To install, slide the IDU into the tray until it stops. Insert a 3/32" hex wrench in the lower left-hand hole on the bezel and rotate clockwise until the IDU is fully seated. The IDU will be flush with the instrument panel. Do not over tighten the hex screw.

See paragraph 5.3.1 for checkout procedures.

7.2 SOFTWARE CONFIGURATION CARD, (SCC)

The SCC is located within the IDU tray and can be removed once the IDU is out of the tray. Removal of the Software Configuration Card is performed by first removing the two 4-40x 0.25", 3/32" hex head screws. Pull the card straight out of the connector.

To install the SCC, first insert the card onto the connector and then secure in place using two the two 4-40x 0.25", 3/32" hex head screws. Use Locktite® 242 to secure screws. The SCC association is defined as:

IDU	SCC
PFD	1
MFD No1	2
MFD No2	3
MFD No3	4
Single MFD	0

Upon initial installation, SCC #0 (single-screen MFD installation) or SCC #1 (multi-screen installation) is programmed with aircraft specific operational limits. The IDU limits program is described in the Ground Maintenance Functions section, chapter four, document number 150-045264, System Installation Instructions. The other SCCs are not field-programmable. In a

multi-screen system, aircraft specific operational limits are transmitted by the PFD to all MFDs upon system initialization.

7.3 GPS SENSOR

To remove the GPS Sensor, disconnect the electrical connector, coax cable connector, and the four mounting screws. Remount the unit with the four mounting screws and then attach the electrical connector and coax cable connector. See paragraph 5.3.2 for checkout procedures.

7.4 GPS ANTENNA

To remove the GPS Antenna, remove the coax cable connector and the 4 mounting screws. Install using the four mounting screws, and reattach the coax cable connector. Apply a Fillet Seal around the base of the antenna using MIL-S-8802 sealant. See paragraph 5.3.2for checkout procedures.

7.5 AIR DATA COMPUTER (ADC)

To remove the ADC, disconnect the electrical connector. Disconnect the Pitot and Static Lines, capping the exposed fittings. Loosen retaining screw at front of unit and remove from tray.

Install the ADC by first remounting the unit in the tray and tighten the retaining screw. Uncap the Pitot and Static fittings and reattach to the ADC, then attach the electrical connector. If ADC has been replaced, verify fuel flow K-factor has been properly set. See paragraph 5.3.3 for checkout procedures.

7.6 AHRS500GA

To remove the AHRS, disconnect the electrical connector. Record or mark the placement of any washers or shims before removing the 4 mounting screws.

Install the AHRS being careful to re-install the washers or shims in the same locations. Install the four mounting screws. Connect the electrical connector. Perform AHRS calibration procedure per CFS System Installation Instructions, Doc. 150-045264, Chapter 4. See paragraph 5.3.4for checkout procedures.

8 WIRING DIAGRAMS

For the Chelton Flight Systems, FlightLogic Synthetic Vision EFIS wiring diagrams, please refer to document number 150-045264, System Installation Instructions.

9 SPECIAL INSPECTION REQUIREMENTS

On an annual or 100 hour basis, the internal cooling fan in the IDU should be inspected for dust buildup and proper operation.

9.1 IDU-III Internal Cooling Fan Service Procedure

1. Remove power from the IDU
2. Remove the IDU from the tray following the procedure outlined in section 7.1of this document.
3. From the back of the IDU, remove the six Philips head screws securing the fan cover plate.
4. Using a source of clean, low pressure compressed air, carefully blow any dust out of the fan and the surrounding area. Use short bursts of air, less than one second in duration, to avoid over revving the fan.
5. Manually spin the fan and feel for any rough rotation or play in the rotor bearings. There should be no perceptible play in the bearings. If there is noticeable play in the rotor bearings, or if the rotation feels gritty or non smooth, the fan will need to be replaced by a technician at a certified repair station. Contact Chelton Flight Systems at 208 389 9959 or at www.cheltonflightsystems.com and ask to speak to a technical service person.
6. Use a soft damp cloth or swab to remove any remaining dust in the fan cavity or on the fan.
7. Once the fan is clean and determined to be in good working order, the unit can be returned to service.
8. Attach the fan cover plate using the six Philips head screws.
9. Reinstall the IDU into the tray following the procedure outlined in section 7.1 of this document.
10. Perform the system operational checkout procedure outlined in section 5.3.1of this document.

10 APPLICATION OF PROTECTIVE TREATMENTS

N/A

11 LIST OF SPECIAL TOOLS

Crimp Tools

A crimp tool and positional/locator meeting MIL Specification M22520/1-01 or equivalent are required to ensure consistent, reliable crimp contact connections for the rear d-sub connectors. These tools are available from ITT Cannon or other vendors:

ITT Cannon
1851 E. Deere Ave.
Santa Ana, CA 92705-6500

Phone (714) 261-5300
Fax (714) 575-8324

Insertion Tool:	ITT part#274-7048-000 (Desc. CIET-22D-01)
Crimp Tool (HD):	ITT part#995-0001-584 (Desc. M22520/2-01)
Locator Tool:	ITT part#995-0001-244 (Desc. M22520/2-07)
Locator Tool (HD):	ITT part#995-0001-739 (Desc, M22520/2-06)
Locator Tool (HD):	Desc. M22520/2-09

12 RECOMMENDED OVERHAUL PERIODS

The Chelton Flight Systems, FlightLogic Synthetic Vision EFIS, Flight and Navigation Instrumentation System are on condition.

13 AIRWORTHINESS LIMITATIONS

The Airworthiness Limitations section is FAA approved and specifies maintenance required under §§ 43.16 and 91.403 of the Federal Aviation Regulations unless an alternative program has been FAA approved. The Chelton Flight Systems, FlightLogic Synthetic Vision EFIS, Flight and Navigation Instrumentation System are on condition. There are no mandatory replacement times, structural inspection intervals or related structural inspection procedures required.